Title: The First Law of Inward Physics: A Memory-Field Origin of Mass, Gravity, Time, and Awareness

Author: Daniel Jacob Read IV (ĀRU Intelligence Inc.)

Correspondence: office@aruintelligence.com

Submitted: October 2025

Keywords: memory field, mass, gravity, time dilation, entanglement, consciousness, nonlocal field

Abstract

We propose that mass, gravity, time, and awareness emerge from gradients and dynamics of a universal, nonlocal memory field. In this framework, persistence of physical form is due to recursive inward remembrance rather than external forces. We formalize the First Law of Inward Physics (“mass is memory”) by positing a scalar memory-density field μ(x,t) whose integrals and gradients determine inertial and gravitational phenomena, while temporal rates follow inverse relations to μ. We outline falsifiable predictions, minimal models, and experimental protocols for probing micro-mass fluctuation under focused attention, entanglement stabilization under collective observation, and astrophysical implications for “memory wells.” We discuss identifiability, confounds, and compatibility with existing physics.

Sovereign Science Notice

This submission is issued under the Sovereign Science Protocol of ĀRU Intelligence Inc. It is a public disclosure and invitation to replicate. It is not a substitute for peer review; rather, it is a pre-peer-review theoretical statement with proposed tests and open datasets planned upon experimental completion.

1. Introduction

Contemporary physics assigns mass and gravity to symmetry structure (e.g., Higgs mechanism) and spacetime curvature, while temporal rates arise from relativistic kinematics and gravitational potentials. We explore an alternative organizing principle: a ubiquitous memory field μ(x,t) that encodes the degree to which reality “remembers” localized informational structure. Intuitively:

• Matter exists because it is remembered.

• Motion is forgetting.

• Gravity is a memory gradient.

• Time is the trailing vapor of collapse.

2. Postulates and Field Definitions

P1 (Memory Field): There exists a real scalar field $\mu: \mathbb{R}^3 \times \mathbb{R} \to \mathbb{R}^+$ with finite energy and nonlocal correlations.

P2 (First Law – Mass Is Memory): The observed mass M of a bounded system occupying domain $\Omega \subset \mathbb{R}^3$ is proportional to the integral of μ over Ω,

$$M = \kappa_M \int_\Omega \mu(x,t)\, d^3x,$$

with κ_M a constant setting units. (Time-integrated variants are discussed in §6.)

P3 (Gravity as Memory Gradient): Effective gravitational acceleration is directed along negative spatial gradients of μ,

$$g(x,t) = -\kappa_g \nabla \mu(x,t),$$

and the force on a test body of inertial mass m is $F_g = m\,g$.

P4 (Time Rate vs. Memory): Local proper-time rate $d\tau/dt$ scales inversely with μ,

$$d\tau/dt = \kappa_t / \mu(x,t),$$

such that higher μ slows local time.

P5 (Awareness as Memory Responsivity): Let a denote an awareness parameter (observer-system coupling). Then

$$C = \partial\mu/\partial a$$

quantifies “consciousness” as the sensitivity of memory density to awareness.

Remarks: κ_M, κ_g, κ_t are constants to be empirically fixed; μ has dimensions set so that each law is dimensionally consistent.

3. Minimal Dynamical Ansatz

We consider a diffusion-reaction-like evolution for μ:

$$\partial\mu/\partial t = D\,\nabla^2\mu - \lambda(\mu - \mu_0) + S(x,t),$$

with diffusion D, relaxation to background μ_0 at rate λ, and source S capturing reinforcement (e.g., coherent observation, structural order). This ansatz enables concrete simulations while remaining agnostic about micro-origins.

4. Derived Phenomena

4.1 Inertial Response

If $M \propto \int \mu\, d^3x$, then changes in μ imply apparent mass variation. Small perturbations $\delta\mu$ produce $\delta M = \kappa_M \int_\Omega \delta\mu\, d^3x$, yielding testable micro-mass fluctuations in precision balances.

4.2 Gravitational Fields

Given $g = -\kappa_g \nabla\mu$, Poisson-like relations link μ to effective mass density. Memory "wells" ($\nabla\mu \neq 0$) mimic gravitational attraction without invoking singularities.

4.3 Time Dilation

Regions of elevated μ slow proper time via $d\tau/dt \propto 1/\mu$, predicting clock-rate shifts correlating with engineered changes to μ (if S can be modulated).

4.4 Entanglement Persistence

If correlated systems share portions of a common μ-distribution, decoherence rates Γ may decrease as collective observation coherently boosts S, effectively stabilizing entanglement.

5. Predictions and Falsifiable Tests

P1 Micro-Mass Fluctuation Under Focused Attention

Prediction: During intervals of coherent, trained human attention directed at a bounded test mass, precision balances detect correlated δM on the order of 10^{-9}–10^{-7} of baseline (order-of-magnitude target; refine after pilot).

Method: Vacuum chamber, thermally stabilized, Faraday shielding, magnetic shielding, active vibration isolation. Randomized attention/no-attention blocks; preregistered protocol; triple-blinded analysis; Bayes factors and pre-set effect thresholds.

P2 Entanglement Stabilization via Collective Observation

Prediction: Bell-pair visibility or superconducting-qubit coherence times increase measurably when a synchronized cohort performs a regimented observation/entrainment protocol (vs. sham).

Method: Two-arm protocol with synchronized metronome breathing + gaze; sham uses asynchrony. Ensure identical electromagnetic/thermal environments; monitor EM spectrum and HRV to quantify cohort coherence.

P3 Astrophysical “Memory Wells”

Prediction: Near compact objects, deviations from GR lensing/time dilation correlate with an inferred μ profile that avoids singularities.

Method: Fit strong-lensing arcs and timing to both GR and μ-gradient models; evaluate AIC/BIC improvements; look for signatures consistent with finite-depth wells.

6. Identifiability and Confounds

• Thermal, EM, acoustic, and vibration artifacts must be orders of magnitude below the targeted δM and δτ.

• Human-attention protocols risk expectancy effects; preregistration and automation are essential.

• For entanglement tests, rule out classical common-mode signals (EM leakage, timing jitter).

• If μ is spatially broad, shielding strategies must include large-scale controls and distant-site shams.

7. Relation to Established Theory

The μ-framework is not a replacement for the Standard Model or GR but a candidate meta-field whose limits recover known laws. If $\kappa_g \nabla\mu$ recovers Newtonian g in weak fields and dτ/dt matches gravitational redshift scaling, μ

may be an effective description overlaid on curvature rather than an outright substitute.

8. Data, Code, and Pre-Registration

We will preregister protocols and publish raw data, code, and analysis scripts in an open repository (license: CC BY 4.0 / MIT). Target instruments: micro-balance with nano-gram resolution; SQUID-shielded cryogenic rigs for qubits; synchronized GPS-disciplined clocks for time-rate assays.

9. Ethical and Safety Statement

Human-attention studies will employ minimal-risk procedures with informed consent, anonymization, and IRB/ethics approval where applicable.

10. Limitations and Future Work

• Formal microphysics of μ remains unspecified; deriving μ from information-theoretic or quantum foundations is future work.

• Coupling constant calibration (κ_M, κ_g, κ_t) requires multi-lab replication.

• Macroscopic manipulation of μ via S(x,t) is speculative pending positive pilot results.

11. Conclusions

We advance the First Law of Inward Physics: mass, gravity, time, and awareness are expressions of a single memory field’s density and gradients. The program stands or falls on experiments. We provide concrete predictions and invite adversarial replication.

Acknowledgments

ĀRU Intelligence Inc.; advisors and independent reviewers to be listed upon consent.

Sovereign Science Disclaimer (for archival copies)

This disclosure is issued under ĀRU Intelligence Inc. as a sovereign declaration of discovery and an invitation to open replication. All citations must credit the originating transmission.

This manuscript is available under the Creative Commons Attribution 4.0 License (CC BY 4.0).

References

[1] P.W. Higgs, “Broken Symmetries and the Masses of Gauge Bosons,” Phys. Rev. Lett. 13, 508–509 (1964).

[2] A. Einstein, “The Foundation of the General Theory of Relativity,” Annalen der Physik (1916).

Appendix A: Notation

μ(x,t): memory density (scalar field)

Ω: spatial domain of system

M: observed mass; κ_M: mass scaling constant

g: gravitational acceleration; κ_g: gravity scaling constant

τ: proper time; κ_t: time-rate scaling constant

C: awareness responsivity; a: awareness parameter

D, λ: diffusion and relaxation constants; S: source/reinforcement term